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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/797,725	03/11/2004	Albert Jan Hendrik Klomp	081468-0308636	4128

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PILLSBURY WINTHROP SHAW PITTMAN, LLP
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EXAMINER

GUTIERREZ, KEVIN C

ART UNIT	PAPER NUMBER
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2851

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08/08/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/797,725	Applicant(s) KLOMP ET AL.	
	Examiner Kevin Gutierrez	Art Unit 2851	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 May 2007.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4 and 6-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4 and 6-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>6-20-07</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on May 25, 2007 has been entered.

Response to Arguments

2. Applicant's arguments, see Remarks, filed May 25, 2007, with respect to the amended claim(s) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of newly found prior art. Further, the Examiner relies on the del Puerto et al. as the primary reference with newly found prior art cited as the secondary references as stated in the rejections below.

Claim Objections

3. Claims 6 and 8 are objected to because of the following informalities: It has been held that the recitation that an element is "adapted to" perform a function is not a positive limitation but only requires the ability to so perform. It does not

constitute a limitation in any patentable sense. *In re Hutchinson*, 69 USPQ 138.
Appropriate correction is required.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-4, 6-9 and 15-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over del Puerto et al. (US 2003/0082466) in view of Adams (6,059,507).

Regarding claim 1, del Puerto et al. disclose "at least one load lock (104) constructed and arranged to transfer an object between a first environment (104; alignment load lock) and a second environment (106; wafer exchanger chamber);

an object handler (109; robot) comprising a handler chamber (106) in which said second environment prevails, said object handler (109) and said at least one load lock (107) being constructed and arranged to transfer said object between said handler chamber and said at least one load lock ([0031], lines 14-16); and

a lithographic projection apparatus comprising a projection chamber (111; lithography patterning chamber);

wherein said handler chamber (106) and said projection chamber (111) can communicate for transferring of said object between said handler chamber (106) and said projection chamber ([0032], lines 4-7), and

del Puerto et al. further disclose at least one load lock chamber with at least one distinct object support (104) and include a step to or evacuation of load lock chamber (fig. 4A, step 425; [0053], lines 1-9), but does not disclose “a load lock chamber with 1) at least two mutually distinct object supports, each object support comprising a support plate being configured to individually support said object, and

2) a positioning device constructed and arranged to decrease the distance between one of said support plates and a ceiling plate of the load lock chamber prior to and/or during evacuation of said load lock chamber, and to increase said distance between said support plate and said ceiling plate prior to said object being removed from or delivered to said at least one of said object supports.”

However, Adams teach a load lock chamber (fig. 1, 26) with at least two mutually distinct object supports, each object support comprising a support plate (66, 68; support sections) configured to individually support said object (col. 4, lines 35-37), and

a positioning device (64, 70; vertical drive motor) constructed and arranged to decrease the distance between one of said support plates (66, 68) and a ceiling plate (72; top plate) of the load lock chamber (26) prior to and/or during evacuation (col. 5, lines 62-66) of said load lock chamber (col. 4, lines 50-52), and to increase said distance between said support plate (66, 68) and said ceiling plate prior to said object

(S) being removed from or delivered to said at least one of said object supports (col. 6, lines 17-19).” Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the load lock chamber of del Puerto et al. by including at least two mutually distinct supports, a ceiling plate, a positioning device constructed and arranged to increase and/or decrease the distance between the support plate and ceiling plate in a manner described above for at least the purpose to of increasing the production of wafer fabrication by utilizing a plurality of wafers in a shorter time period.

Regarding claim 2, del Puerto et al. further disclose “wherein said second environment (106) has a lower pressure than said first environment ([0031], lines 7-13).”

Regarding claim 3, del Puerto et al. further disclose “wherein said load lock (107) further comprises evacuation devices ([0030], lines 12-15; [0031], lines 3-4).”

Regarding claim 4, del Puerto et al. further disclose “wherein said load lock (104) further comprises door devices (102, 107; gate valves) constructed and arranged to close said load lock chamber during evacuation and to open said load lock chamber to permit said object to be positioned into said load lock chamber and to respectively permit said object to be removed from said load lock chamber ([0031], lines 7-14).”

Regarding claim 6, del Puerto et al. as modified disclose a positioning device, but does not disclose “wherein said positioning device is adapted to decrease a gas volume adjacent a surface of said object positioned on at least one of said object supports.”

However, Adams teach where the positioning device (64, 70) is adapted to decrease a gas volume adjacent a surface of said object positioned on at least one of said object supports (col. 5, lines 9-11). Thus, it would have been obvious to one ordinary skilled in the art at the time the invention was made to further modify the positioning device of del Puerto et al. as modified by decreasing a gas volume in a manner described above for at least the purpose to increase wafer manufacture.

Regarding claim 7, del Puerto et al. further disclose “wherein said support plate (211; chuck) is a size about equal to or larger than said object to be supported (see fig. 2A, where 211 is substantially equal in size to the object 207),

wherein the ceiling plate (201; alignment load-lock roof) is provided above said at least one of said object supports, said ceiling plate having a size of about equal to or larger than said object (see fig. 2A, where 201 is larger than 207).”

Regarding claim 8, del Puerto et al. further disclose “wherein said positioning device is adapted to act on one of said support plate and said ceiling plate, while the other of said support plate and said ceiling plate is arranged in a stationary manner in said load lock chamber ([0045], lines 12-17).”

Regarding claim 9, del Puerto et al. further disclose “wherein said positioning device is provided at a side of said load lock chamber, at the top of said load lock chamber, or at the bottom of said load lock chamber ([0045], lines 17-18).”

Regarding claim 15, del Puerto et al. further disclose a load lock chamber with an evacuation device ([0031], lines 7-11). del Puerto et al. disclose a bottom wall (231), but does not disclose wherein said load lock chamber comprises a top wall.

However, it is inherent for a chamber to comprise of a top wall, which an enclosure is necessary to utilize a vacuum space as disclosed by del Puerto et al. Thus, it would have been obvious to one ordinary skilled in the art at the time the invention was made to further modify the load lock chamber of del Puerto et al. for at least the purpose of maintaining a vacuum space for transferring of the wafer.

Regarding claim 16, del Puerto et al. further discloses “wherein said venting opening and said evacuation opening are arranged substantially centrally with respect to said object supports, said object supports being arranged one above the other (204, 205, 206; wafer supports; [0040], lines 9-11).”

Regarding claim 17, del Puerto et al. further disclose “wherein said projection chamber (111) is a vacuum chamber and wherein said lithographic projection apparatus comprises vacuum devices constructed and arranged to establish a vacuum in said vacuum chamber ([0031], lines 7-11; [0033], line 3).”

Regarding claim 18, del Puerto et al. further
“a radiation system constructed and arranged to provide a beam of radiation ([0004], lines 15-17);

a support structure to support a patterning devices, said patterning devices serving to pattern said beam according to a desired pattern ([0006], line 5-9);

a substrate table for holding a substrate [0004], line 10); and

a projection system constructed and arranged to project said patterned beam onto a target portion of said substrate ([0004], lines 11-12).”

Regarding claim 19, del Puerto et al. further disclose “wherein said object is a semiconductor wafer ([0004], line 5).”

Regarding claim 20, del Puerto et al. further disclose “wherein said door device comprises a first door (102; gate valve) towards said first environment and a second door (107; gate valve) towards said second environment.”

Regarding claim 21, del Puerto et al. further disclose “further comprising two or more of said load locks (104, 105, 114).”

Regarding claim 22, del Puerto et al. further disclose all of the claimed limitations set forth in claim 1 and further discloses “wherein said object handler (109) is integrated in said load lock, so that said handler chamber (106) and said load lock chamber are a single unit ([0031], lines 12-16, fig. 1, where the gate valves can be controlled to implement the load lock chamber and handler chamber to operate as a single unit chamber).”

6. Claims 10-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over del Puerto et al. in view of Adams, as applied to claim 1 above, and further in view of Fuse et al. (5,217,507). The teachings of del Puerto et al. and Adams have been discussed above.

Regarding claim 10, del Puerto et al. as modified disclose a load lock, but does not disclose “wherein said load lock includes a thermal treatment device constructed and arranged to bring said object to a predetermined temperature or equalize said temperature across said object.”

However, Fuse et al. teach “wherein said load lock includes a thermal treatment device constructed and arranged to bring said object to a predetermined temperature or equalize said temperature across said object (col. 7, lines 56-59, where the wafer’s temperature is made uniform).” Thus, it would have been obvious to one ordinary skilled in the art at the time the invention was made to further modify the load lock of del Puerto et al. as modified to including a thermal treatment device in a manner described above for at least the purpose to reduce thermal fluctuations of objects.

Regarding claim 11, del Puerto et al. as modified disclose at least two object supports, but does not disclose “wherein a said support plate of at least one of said at least two object supports is provided with said thermal treatment device.”

However, Fuse et al. teach “wherein a said support plate (18; treatment boat) of at least one of said at least two object supports (58, 18) is provided with said thermal treatment device.” Thus, it would have been obvious to one ordinary skilled in the art at the time the invention was made to further modify the load lock of del Puerto et al. as modified to including a thermal treatment device in a manner described above for at least the purpose to reduce thermal fluctuations of objects.

Regarding claim 12, del Puerto et al. as modified disclose “wherein two of said at least two object supports are place one above the other,” but does not disclose “wherein said thermal treatment device is positioned between said two of said at least two object supports.”

However, Fuse et al. teach “wherein said thermal treatment device is positioned between said two of said at least two object supports (col. 3, lines 58-63).” Thus, it would have been obvious to one ordinary skilled in the art at the time the invention was made to further modify del Puerto as modified to including a thermal treatment device in a manner described above for at least the purpose to avoid thermal damage of objects.

Regarding claim 13, del Puerto et al. as modified disclose the claimed invention except for “wherein said thermal treatment device comprises lines and a fluid pumping system constructed and arranged to pump fluid through said lines, said lines being arranged such that said lines are in thermal contact with said corresponding support plate.”

However, Fuse et al. teach “wherein said thermal treatment device comprises lines (10; process tube) and a fluid pumping system constructed and arranged to pump fluid through said lines (col. 6, lines 33-36, where gas is carried out through tubes), said lines being arranged such that said lines are in thermal contact with said corresponding support plate (col. 6, lines 17-19).” Thus, it would have been obvious to one ordinary skilled in the art at the time the invention was made to further modify the thermal treatment device of del Puerto et al. by including lines and a fluid pumping system in a manner described above for at least the purpose to promote thermal control.

Regarding claim 14, del Puerto et al. as modified disclose said support plate, lines and the load lock chamber, but does not disclose "wherein said lines are provided internally in one of said support plate and a wall of said load lock chamber."

However, Fuse et al. teach "wherein said lines are provided internally in one of said support plate and a wall of said load lock chamber (col. 6, line 8 and lines 17-19)." Thus, it would have been obvious to one ordinary skilled in the art at the time the invention was made to further modify the lines of del Puerto et al. as modified by having the lines provided internally in said support plate and wall in a manner described above for at least the purpose to promote thermal control.

Conclusion

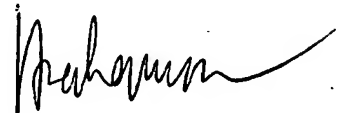
7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Gutierrez whose telephone number is (571)-272-5922. The examiner can normally be reached on Monday-Friday: 7:30 a.m. - 4:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diane Lee can be reached on (571)-272-2399. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Kevin Gutierrez
Examiner
Art Unit 2851

August 3, 2007



HENRY HUNG NGUYEN
PRIMARY EXAMINER